

Work Order ID 163637

Tuesday, July 04, 2017 1:05:09 PM

163637

Page 1

Item ID: D5046-047**Accept*****N900040100*****Setup Start*****NS1*****Revision ID:****Stop*****NS2*****Item Name:** Co-Pilot Collective Head Assembly**Start Date:** 7/10/2017 **Start Qty:** 2.00***2*****Cust Item ID:****Required Date:** 7/21/2017 **Req'd Qty:** 2.00***2*****Customer:****Reference:****Approvals:****Process Plan:****Date:** JUL 04 2017 **Tooling:****Date:****Run****Start*****NR1*****QC:****Date:****SPC (Y/N):****Date:****Stop*****NR2*****Sequence ID/
Work Center ID****Operation
Description****Set Up/
Run Hours****Tool ID****Tool #****Plan
Code****Accept
Qty****Reject
Qty****Reject
Number****Insp.
Stamp****Draw Nbr****Revision Nbr**

D5046

B

110

Weld per dwg A/R Aluminum rod Batch: 134785 0.00

110

Large Fab

Memo

0.94

Large Fab

WELD D5054-1 to D5046-7 AS PER DWG

(2)

OK

17/07/17

120

QC9- Inspect visual per QSI004- Fusion Welds

0.00

120

QC

Memo

0.00

Quality Control

(3)

17.07.18

DAS
9
9-89

130

QC5- Inspect part completeness to step on W/O

0.00

130

QC

Memo

0.04

Quality Control

(2)

17.07.18

DAS
9
9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 163637

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163637

Page 2

Item ID: D5046-047 **Accept** ***N900040100*** **Setup Start** ***NS1***
Revision ID: **Stop** ***NS2***
Item Name: Co-Pilot Collective Head Assembly
Start Date: 7/10/2017 **Start Qty:** 2.00 ***2*** **Cust Item ID:**
Required Date: 7/21/2017 **Req'd Qty:** 2.00 ***2*** **Customer:**
Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** ***NR1***
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop** ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140 *140* Outsource4 Outsource process - Anodize	Outsource process-Anodize per QSI017 4.1.10.1 Memo Issue P/O to ATG: <u>37023</u> Black Anodize as per Dwg D5046 C OF C REQUIRED	0.00 360.00				<u>2</u>			DAB 2017/07/27
150 *150* Packaging Packaging	Receive & Inspect for Damage & Mat'l Certs Memo C OF C REQUIRED	0.00 0.04				<u>2</u>			DAS 6 AUG 18 2017 9-89
160 *160* QC Quality Control	QC6- All purchased or subcontracted products Memo	0.00 0.00				<u>2</u>			DAS 38 9-89 AUG 22 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
☐ OTHER : _____					

Tuesday, July 04, 2017 1:05:09 PM

1636.37

Item ID: D5046-047

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: Co-Pilot Collective Head Assembly

Stop *NS2*

Start Date: 7/10/2017 **Start Qty:** 2.00 ***2***

Cust Item ID:

Required Date: 7/21/2017 Req'd Qty: 2.00 *9*

Customer:

Reference:

Approvals:  **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

[illegible]

DQA:

Date: 17-12-21

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed:

Date: NOV - 1 2017

Work Order update only ☐

Work Order: 1163637		DISPOSITION		AGAINST DEPARTMENT/PROCESS					
Part No. D5046-047		Rework ☐		Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐		
NCR No. 17-6671		Scrap ☒		Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☒		
		Use-as-is ☐		Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐		
		Suspected Unapproved ☐		Large Fab ☐	Composite ☐	Supplier ☐			
Date: 17-09-09		Step #: 170		QTY Effective: 2			MRB (QSI042) Approval		
Description Work Order Deviation		Disposition			DAS 9 9-09 17-09-12			Completed By	
notice of assembly that D5046-7 use was not to drawing. D5046-7 was from rev A.		Scrap destroy no replace						MCC 17-09-13	
R.C. D5046-7 was not remove from stock as per ECUS-577								Lead hand / Supervisor Approval Verification	
								DAS 30 9-09 SFP 13 2017	
								QC / QA Coordinator Approval	
								DAS 9 9-09 17-09-12	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☒	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	☒ Drawing				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER :							

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163637

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Item ID: D5046-047 **Accept** ***N900040100*** **Setup Start** ***NS1***
Revision ID: **Stop** ***NS2***
Item Name: Co-Pilot Collective Head Assembly
Start Date: 7/10/2017 **Start Qty:** 2.00 ***2*** **Cust Item ID:**
Required Date: 7/21/2017 **Req'd Qty:** 2.00 ***2*** **Customer:**
Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start** ***NR1***
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop** ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	QC21- Final Inspection - Work Order Release	0.00							
200									
QC	Memo	0.20							
Quality Control									

DAS
21
9-89 **SEP 13 2017**

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
☐ OTHER : _____									

Tuesday, July 04, 2017 1:05:09 PM

Parent Item: D5046-047

D5046-047

Parent Item Name: Co-Pilot Collective Head Assembly

Start Date: 7/10/2017

Required Date: 7/21/2017

Start Qty: 2.00

Required Qty: 2.00

Comments: IPP REV:A 14.04.11 NEW ISSUE DD VERF:JLM IPP
REV:B 15.07.02 AS PER DWG REV.B DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D5046-7 *D5046-7* Co-Pilot Collective Head		Manufactured	No			110	Each	2.0000	1	2			
				<u>Location</u>									
				ST372				2					
				116453				2		2			
D5054-1 *D5054-1* Conduit		Manufactured	No			110	Each	3.0000	1	2			
				<u>Location</u>									
				WA002				3					
				116454				3		2			
90296A108 *90296A108* Heli-Coil Insert		Purchased	No			170	Each	102.0000	5	10			
				<u>Location</u>									
				GA				102					
				m132757				10					
				m136548				85					
				m136747				7					
D5073-1 *D5073-1* Snap Ring		Manufactured	No			170	Each	51.0000	2	4			
				<u>Location</u>									
				ST147				51					
				117804				50					
				117922				1					

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER : ☐							

Picklist Print

Page 2

Tuesday, July 04, 2017 1:05:09 PM

Work Order ID: 163637

163637

Parent Item: D5046-047

D5046-047

Parent Item Name: Co-Pilot Collective Head Assembly

Start Date: 7/10/2017

Required Date: 7/21/2017

Start Qty: 2.00

Required Qty: 2.00

MS27641-3

Purchased

No

170

Each

4.0000

1

2

MS27641-3

**

BEARING

Location

Loc Qty

Loc Code

ST275

4

M133363

4

2

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



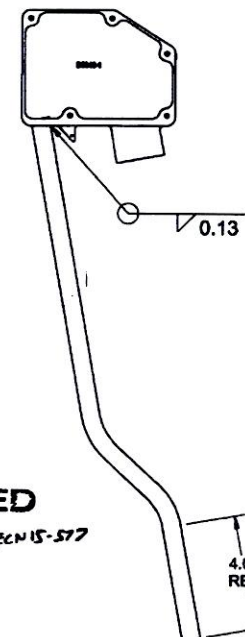
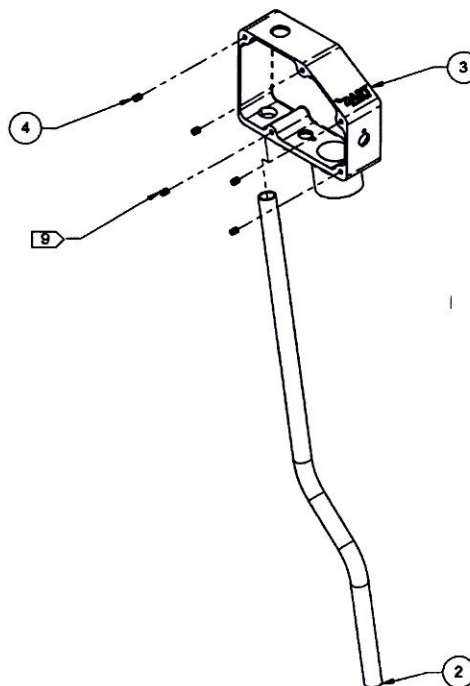
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

Root Cause			FAULT CATEGORY							
Environment ☐	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong
Design ☐	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions
Doc/Data ☐	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance
Equip/Tooling ☐	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect
Handling/Pre ☐	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing
Material ☐	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved
Internal Transport ☐	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing
Tribal Knowledge ☐	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish
LOA ☐	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread
Substation ☐	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence
Past Expiry Date ☐	☐	Manufacturing Process	OTHER :							
Misidentified ☐	☐	Past Due								

ITEM	QTY	P/N	DESCRIPTION
1	X	D5046-041	CO-PILOT COLLECTIVE HEAD ASSEMBLY (205)
2	1	D4410-7	CONDUIT
3	1	D5046-1	CO-PILOT COLLECTIVE HEAD
4	5	90296A108	HELI-COIL INSERT (6-32 X 0.276)



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 163637

JUL 04 2017

RELEASED
A.R. 2015 JUL 02 ECN 15-577

D5046-041 WELDING DETAIL

B	REVISE C-BORE DIM. ZN B3-5, B6-9, B6-11, REVISE HOLE DIM. ZN B2-5, B1-10, B4-12, REVISE HOLE LOCATION ZN C5-5, B4-5, REVISE NECK LENGTH AND REMOVE MOUNTING HOLE. ZN C4-5, B4-7, C4-8, REMOVE PIN FROM BOM. ZND6-1, D6-2, D5-3, REVISE DIM. ZN C5-8, D5-5, B4-7, D5-9, D5-11, D8-6, D8-8, D8-10, C6-6, C6-8, D5-10, D6-12	VS	14.11.20
A	NEW ISSUE	VS	14.01.22
REV.	DESCRIPTION	BY	DATE
DESIGN	VS		
DRAWN	VS		
CHECKED	RF		
MFG. APPR.	JFS		
APPROVED	HS		
DE APPR.	DS		
DATE	14.11.20		

APPROVED

DART AEROSPACE USA, INC.

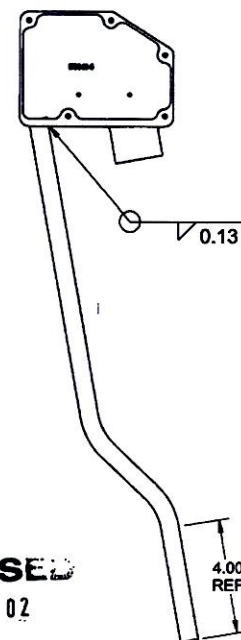
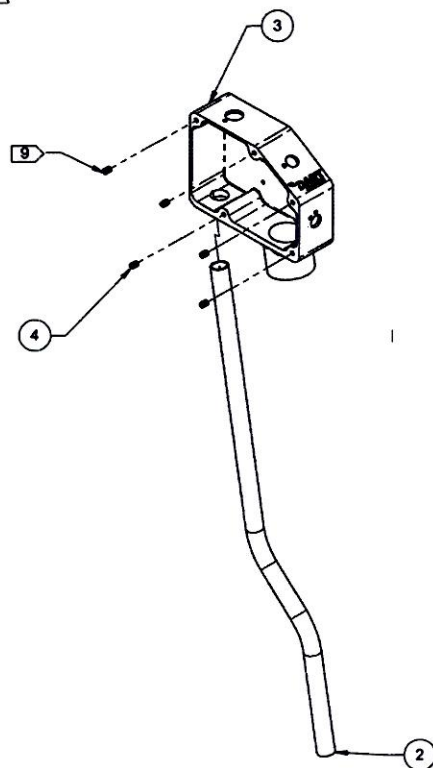
KENT, WA
DRAWING NO. D5046
REV. B
SHEET 1 OF 12
TITLE
CO-PILOT COLLECTIVE HEAD
NTS
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- NOTES:
- 1) MATERIAL: N/A
 - 2) FINISH: ANODIZE BLACK PER MIL-A-8625F TYPE I OR IB OR IC OR II OR IIB CLASS 2 AFTER WELDING
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1
 - 7) WEIGHT: 0.97 lbs
 - 8) WELD PER DART QSI 004
 - 9) INSTALL AFTER ANODIZING

D5046-041 CO-PILOT COLLECTIVE HEAD ASSEMBLY (205)

ITEM	QTY	P/N	DESCRIPTION
1	X	D5046-043	CO-PILOT COLLECTIVE HEAD ASSEMBLY (212)
2	1	D4410-7	CONDUIT
3	1	D5046-3	CO-PILOT COLLECTIVE HEAD
4	5	90296A108	HELI-COIL INSERT (6-32 X 0.276)

△B



RELEASED
A. 2015 JUL 02

D5046-043 WELDING DETAIL

D5046-043 CO-PILOT COLLECTIVE HEAD ASSEMBLY (212)

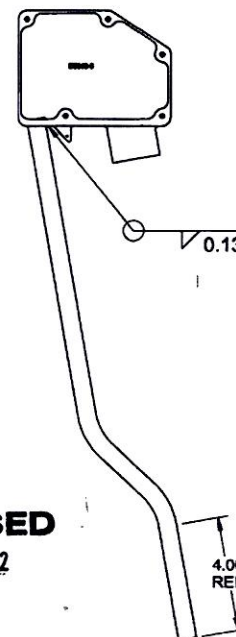
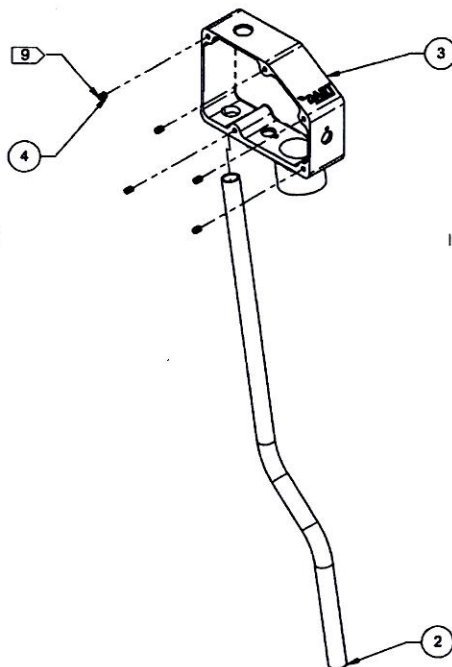
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: ANODIZE BLACK PER MIL-A-8625F TYPE I OR IB OR IC OR II OR IIB CLASS 2 AFTER WELDING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1
- 7) WEIGHT: 0.97 lbs
- 8) WELD PER DART QSI 004
- 9) INSTALL AFTER ANODIZING

APPROVED

DESIGN	VS	DART AEROSPACE USA, INC.	
DRAWN	VS	KENT, WA	
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	JFS	D5046	SHEET 2 OF 12
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
DATE	14.11.20	COPYRIGHT © 2014 BY DART AEROSPACE USA, INC.	
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ITEM	QTY	P/N	DESCRIPTION
1	X	D5046-045	CO-PILOT COLLECTIVE HEAD ASSEMBLY (EAGLE SINGLE)
2	1	D4410-7	CONDUIT
3	1	D5046-5	CO-PILOT COLLECTIVE HEAD
4	5	90296A108	HELI-COIL INSERT (8-32 X 0.276)



RELEASED
4.9.2015 JUL 02

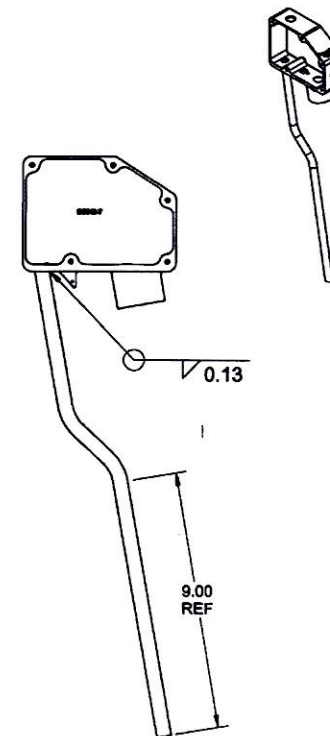
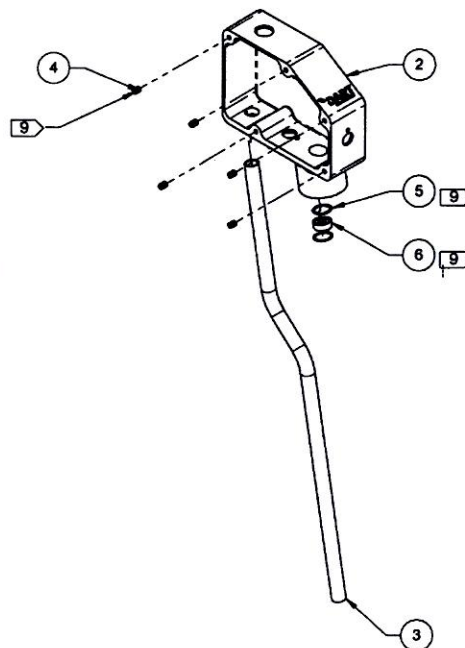
D5046-045 CO-PILOT COLLECTIVE HEAD ASSEMBLY (EAGLE SINGLE)

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: ANODIZE BLACK PER MIL-A-8625F TYPE I OR II OR IC OR II OR IIB CLASS 2 AFTER WELDING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 8.1
- 7) WEIGHT: 0.96 lbs
- 8) WELD PER DART QSI 004
- 9) INSTALL AFTER ANODIZING

APPROVED	DESIGN	VS	DART AEROSPACE USA, INC.	
	DRAWN	VS	KENT, WA	
	CHECKED	RF	DRAWING NO.	REV. B
	MFG. APPR.	JFS	D5046	SHEET 3 OF 12
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
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ITEM	QTY	P/N	DESCRIPTION
1	X	D5046-047	CO-PILOT COLLECTIVE HEAD ASSEMBLY
2	1	D5046-7	CO-PILOT COLLECTIVE HEAD
3	1	D5054-1	CONDUIT
4	5	90298A108	HELI-COIL INSERT (6-32 X 0.276)
5	2	D5073-1	SNAP RING
6	1	MS27641-3	BEARING



D5046-047 WELDING DETAIL

**D5046-047 CO-PILOT COLLECTIVE HEAD ASSEMBLY
(FOR 205 WITH 204-001-290-5 STICK AND THROTTLE ASSEMBLY INSTALLED)**

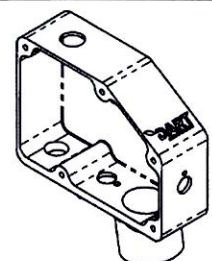
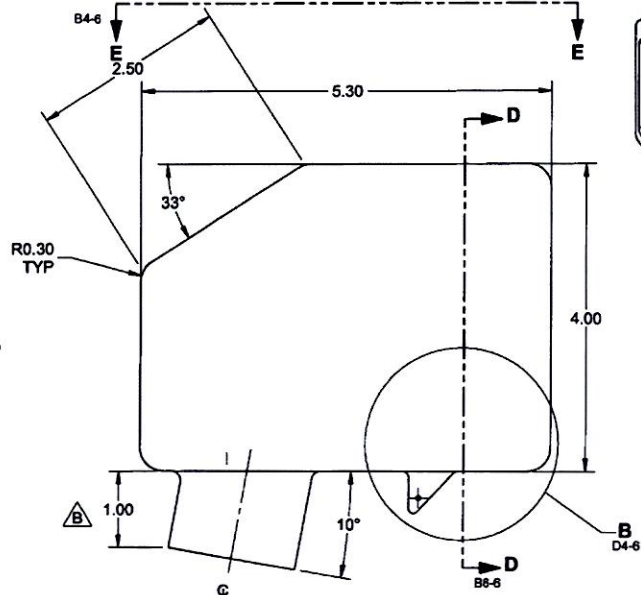
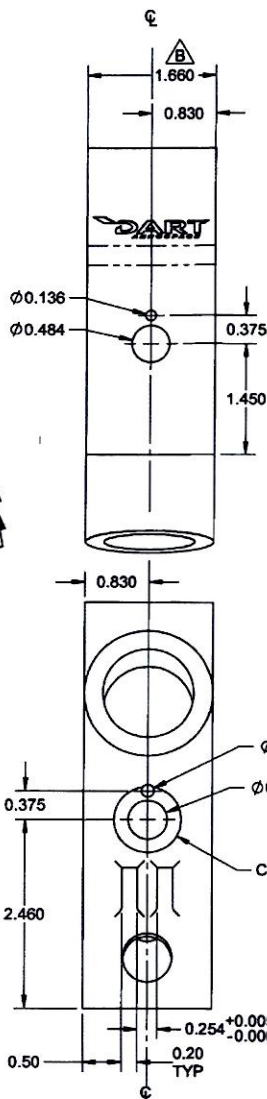
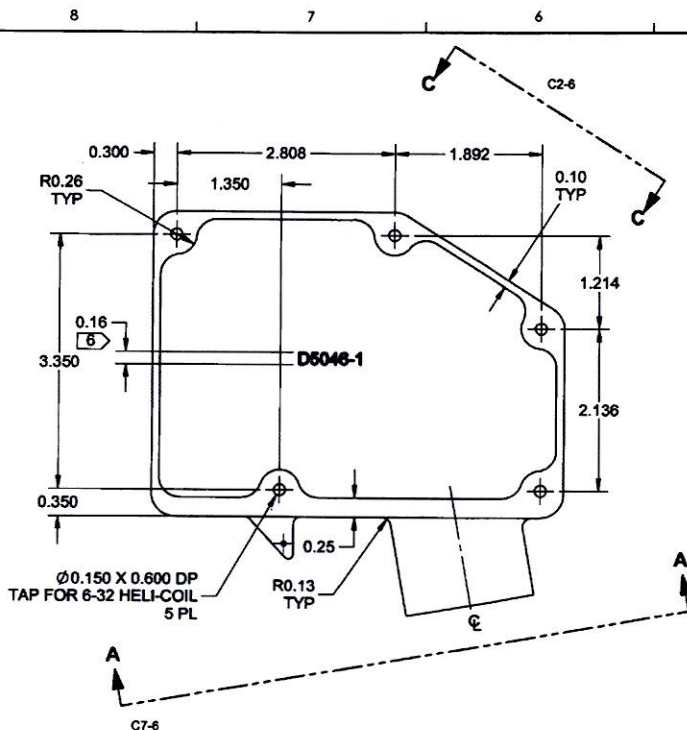
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: ANODIZE BLACK PER MIL-A-8625F TYPE I OR IB OR IC OR II OR IIB CLASS 2 AFTER WELDING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1
- 7) WEIGHT: 1.04 lbs
- 8) WELD PER DART QSI 004
- 9) INSTALL AFTER ANODIZING

RELEASED

A.P. 2015 JUL 02

DESIGN	VS	DART AEROSPACE USA, INC.	
DRAWN	VS	KENT, WA	
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	JFS	D5046	SHEET 4 OF 12
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
DATE	14.11.20	COPYRIGHT © 2014 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT THE WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



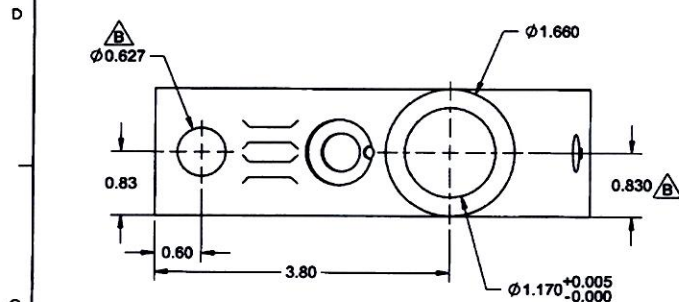
- NOTES:
- 1) MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR
QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221
REF DART SPEC M6061T8B
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.3 IN THIS AREA TO MAX DEPTH
OF 0.010 WITH A MIN. TOOL RAD OF R0.010
 - 7) WEIGHT: 0.80 lbs

D5046-1 CO-PILOT COLLECTIVE HEAD (205)

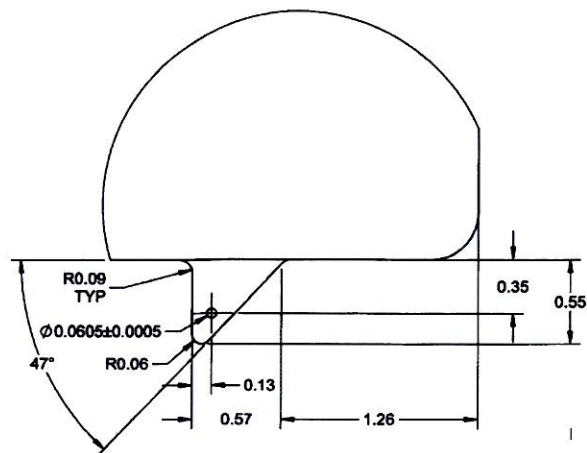
RELEASED
42 2015 JUL 02

APPROVED	DESIGN	VS	DART AEROSPACE USA, INC.	
	DRAWN	VS	KENT, WA	
	CHECKED	RF	DRAWING NO.	REV. B
	MFG. APPR.	JFS	D5046	SHEET 5 OF 12
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
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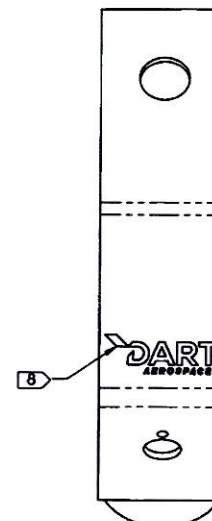
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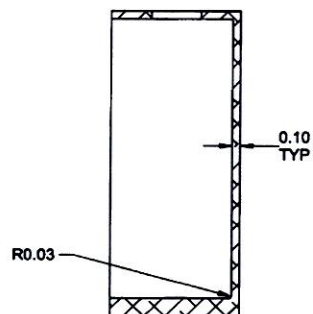
VIEW A-A
B7-5



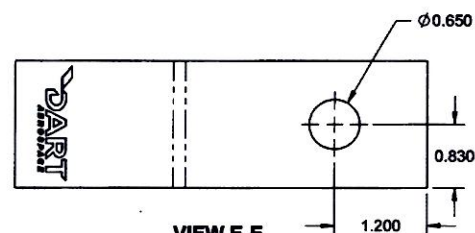
DETAIL B
C2-5



VIEW C-C
D8-5



SECTION D-D
C2-5



VIEW E-E
D3-5

RELEASED
A.P. 2015 JUL 02

- NOTES:**
- 1) MATERIAL: N/A
 - 2) FINISH: N/A
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: N/A
 - 7) WEIGHT: 0.80 lbs
 - 8) ENGRAVE "DART" LOGO AS SHOWN 0.003-0.005 DP

D5046-1 CO-PILOT COLLECTIVE HEAD (205)
DETAIL VIEWS

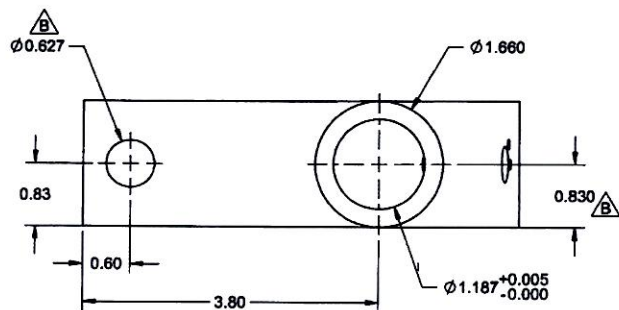
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	CHECKED	RF	DRAWING NO.	REV. B
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	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
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8 7 6 5 4 3 2 1

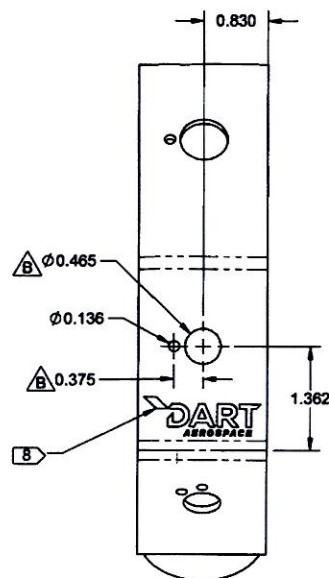
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C
B
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D
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B
A



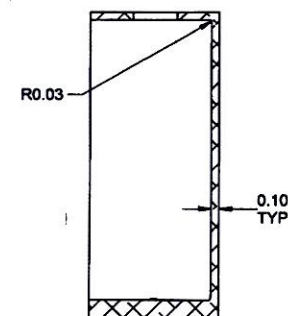
VIEW F-F

B7-7



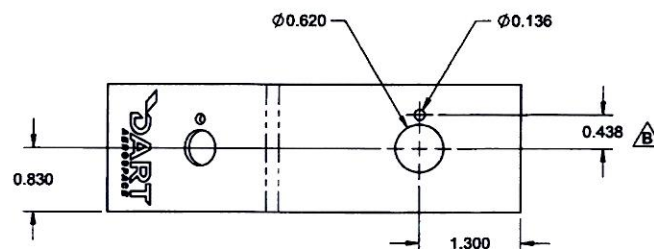
VIEW G-G

D6-7



SECTION H-H

C2-7



VIEW I-I

D3-7

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.80 lbs
- 8) ENGRAVE "DART" LOGO AS SHOWN 0.003-0.005 DP

**D5046-3 CO-PILOT COLLECTIVE HEAD (212)
DETAIL VIEWS**

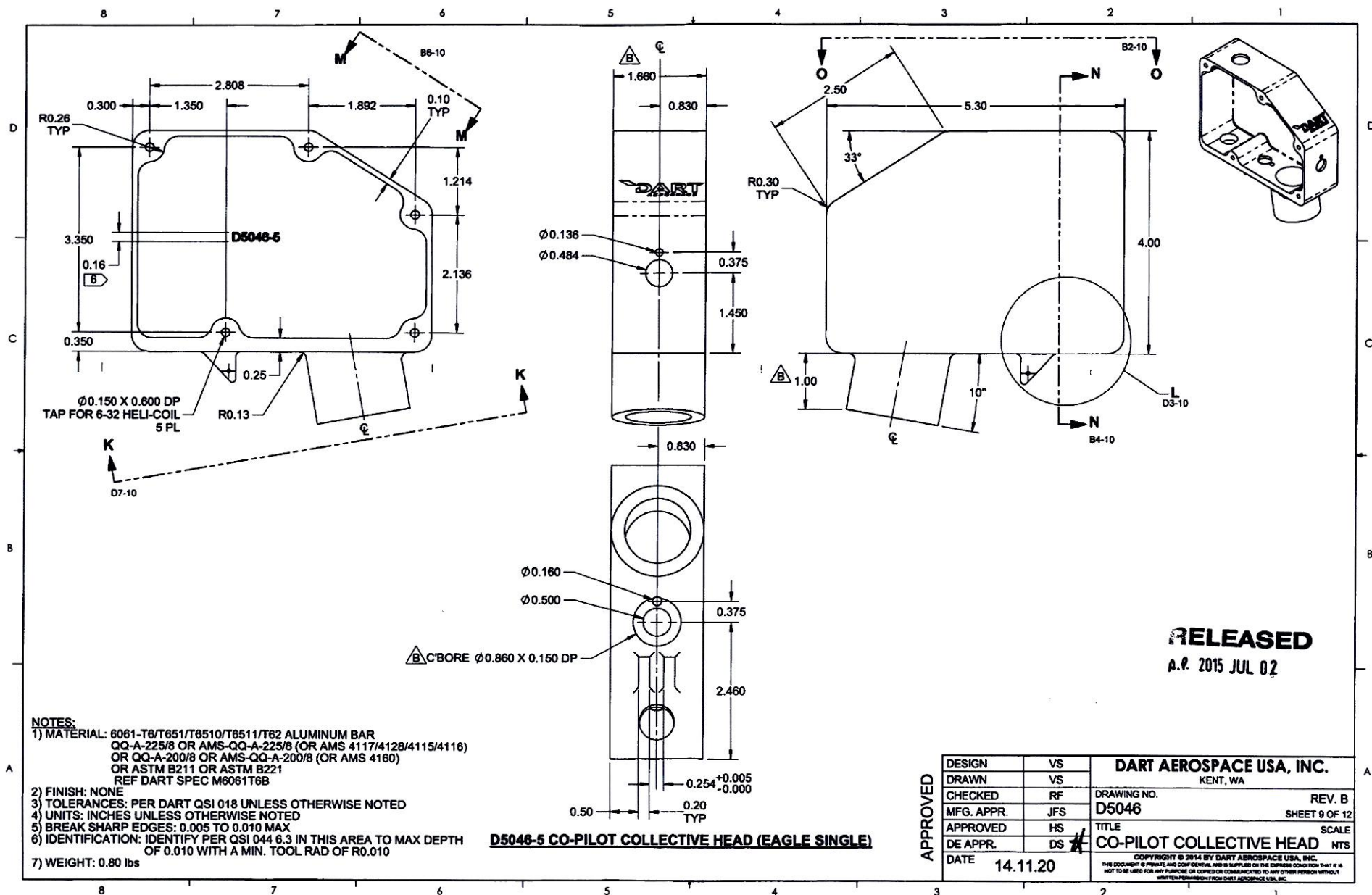
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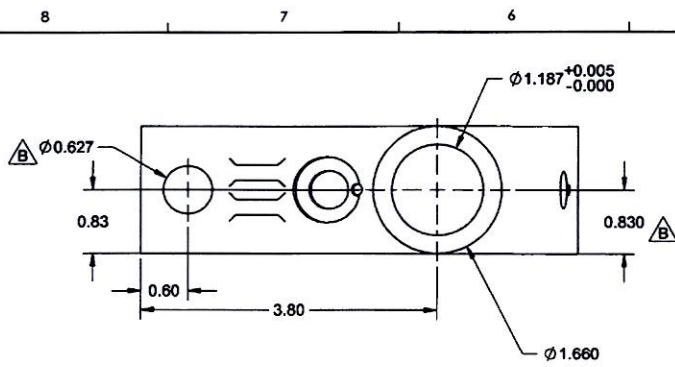
DESIGN	VS	DART AEROSPACE USA, INC. KENT, WA	
DRAWN	VS		
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	JFS	D5046	SHEET 8 OF 12
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
DATE	14.11.20	COPYRIGHT © 2014 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

RELEASED

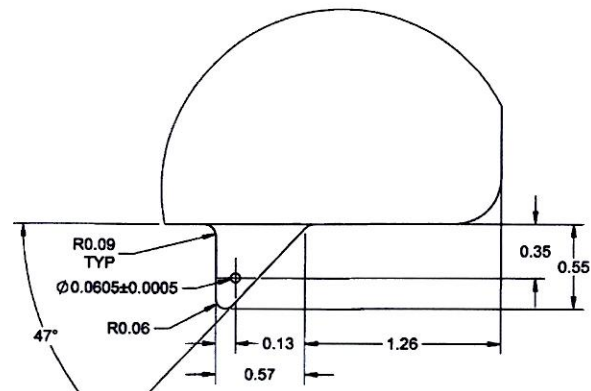
A.P. 2015 JUL 02

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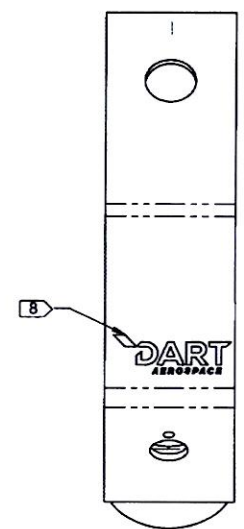




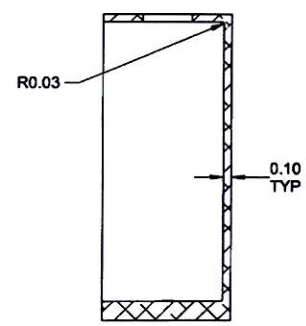
VIEW K-K
B7-9



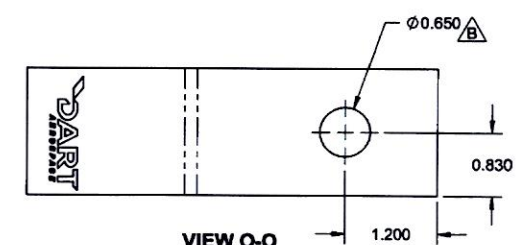
DETAIL L
C2-9



VIEW M-M
D6-9



SECTION N-N
C2-9



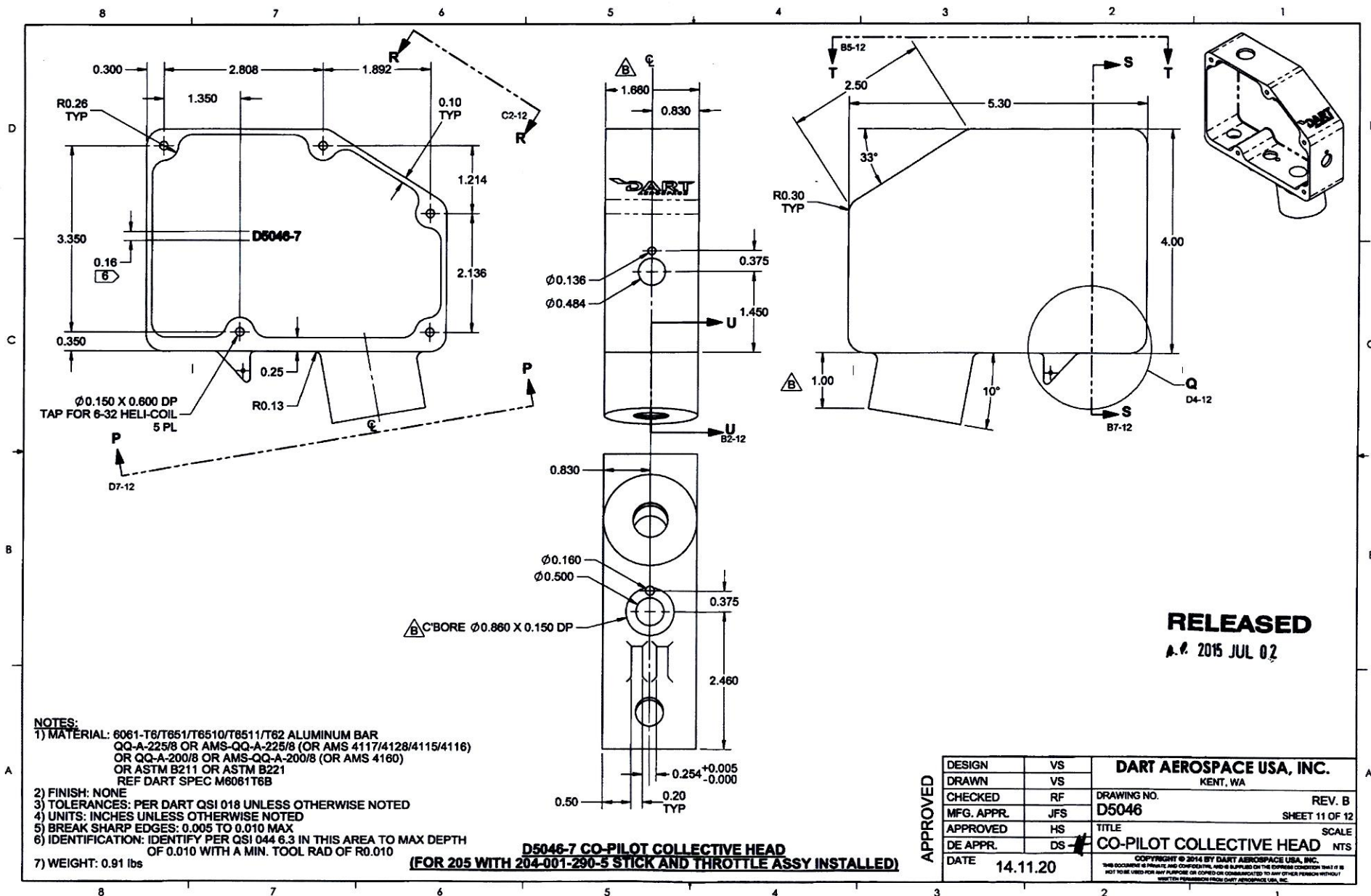
VIEW O-O
D3-9

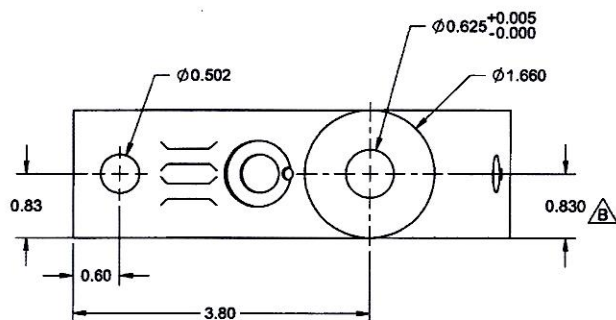
RELEASED
A.P. 2015 JUL 02

- NOTES:**
- 1) MATERIAL: N/A
 - 2) FINISH: N/A
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: N/A
 - 7) WEIGHT: 0.80 lbs
 - 8) ENGRAVE "DART" LOGO AS SHOWN 0.003-0.005 DP

D5046-5 CO-PILOT COLLECTIVE HEAD (EAGLE SINGLE)
DETAIL VIEWS

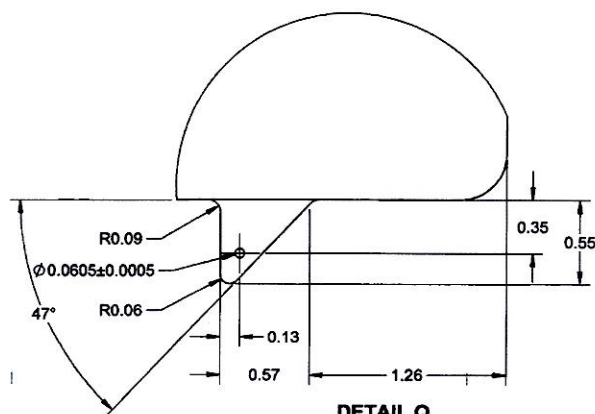
APPROVED	DESIGN	VS	DART AEROSPACE USA, INC. KENT, WA	
	DRAWN	VS		
	CHECKED	RF	DRAWING NO.	REV. B
	MFG. APPR.	JFS	D5046	SHEET 10 OF 12
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	CO-PILOT COLLECTIVE HEAD	NTS
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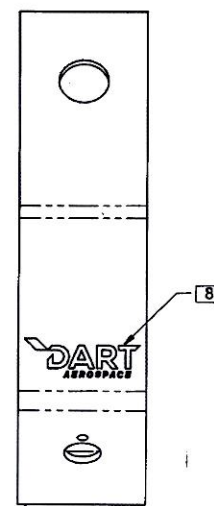
VIEW P-P

C7-11



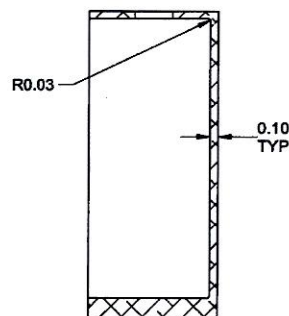
DETAIL Q

C2-11



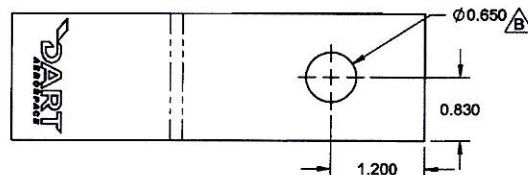
VIEW R-R

D6-11



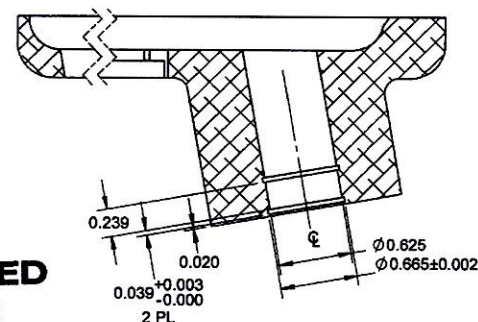
SECTION S-S

C2-11



VIEW T-T

D3-11



SECTION U-U

C5-11

RELEASED

A.E. 2015 JUL 02

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.91 lbs
- 8) ENGRAVE "DART" LOGO AS SHOWN 0.003-0.005 DP

D5046-7 CO-PILOT COLLECTIVE HEAD
(FOR 205 WITH 204-001-290-5 STICK AND THROTTLE ASSY INSTALLED)

APPROVED

DESIGN	VS
DRAWN	VS
CHECKED	RF
MFG. APPR.	JFS
APPROVED	HS
DE APPR.	DS
DATE	14.11.20

DART AEROSPACE USA, INC.

KENT, WA

DRAWING NO. **D5046** REV. B
 SHEET 12 OF 12
 TITLE **CO-PILOT COLLECTIVE HEAD** SCALE NTS

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Dart Aerospace Ltd.

Purchase Order ID P037223

DART
AEROSPACE

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID P037223

Purchase Order Date 7/26/2017

PO Print Date 7/28/2017

Page Number 2 of 8

Order From :

VC-ATG001

Ship To : DART AEROSPACE LTD

A.T.G. INDUSTRIES INC.
731 INDUSTRIELLE ROAD
ROCKLAND, ON K4K 1T2
CANADA

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone 613-446-4544

Ship To Contact

Ship To Phone

Ship Via: VENDOR'S TRUCK

Ship Acct:

Buyer

Customer POID

Customer Tax # 10127-2607

Terms Net 30

Currency CAD

FOB FCA - (Free Carrier)

Line Total: \$0.

4	163298	646.9710 Body	7/26/2017 Yes 7/26/2017	11.00	/	\$0.00	\$0.
Hard anodize as per Dwg 646.9700 Rev D2							

Line Total: \$0

5	163487	647.4113 Clip	7/26/2017 Yes 7/26/2017	11.00	/	\$0.00	\$0
Hard anodize as per Dwg 647.4100 Rev N/C							

Line Total: \$0

6	163637	D5046-047 Co-Pilot Collective Head Assembly	7/26/2017 Yes 7/26/2017	2.00	/	\$0.00	\$0
Black Anodize as per Dwg D5046 Rev B							

Stamp: AUG 1 8 2017

Handwritten: JEP

Stamp: DAS 38 9-88

PO Instructions: PRIMER IS SUPPLIED BY DART

Note:



A.T.G. Industries Inc.
731 Industrielle Street
Rockland, ON K4K 1T2
Canada

Ph: (613) 446-4544

Fax: (613) 446-4556

Pack List

Number: 913719

Date: 18-Aug-17

To

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury, ON K6A 1K7

Ship To

Chantal Lavoie
Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury, ON K6A 1K7

Ph: 613 632-9577

Fax: 613 632-1053

Ph: 613 632-9577

Fax: 613 632-1053

Terms		Ship Via	
Quantity	Description		
	Please reference this document's Pack List number on all correspondences regarding this shipment. If you have any questions, please contact us.		
10 ea	Part: 649.4812 Shim Job: 21459	Rev: B PO: PO37223 Line: 16	
10 ea	Part: 649.4815 Shim Job: 21460	Rev: A PO: PO37223 Line: 17	
2 ea	Part: D5046-047 Co-Pilot Collective Head Assem Black Anodize per MIL-A-8625F, Type II, Class 2, .000007-.0010" (.07 - 1 mils) Job: 21449	Rev: B PO: PO37223 Line: 6	DAS 38 9-89
5 ea	Part: 646.3012 Lower Guide Hard Black Anodize per MIL-A-8625F, Type III, Class 2, .0005-.0045" (.5 - 4.5mils) Prime per MIL-PRF-23377, Type I, Class N (Customer Supplied), .0006-.0009" (.6 - .9 mils) per drawing. Job: 21450	Rev: NC PO: PO37223 Line: 7	
CERTIFICATE OF CONFORMANCE A.T.G Industries Inc. certifies that all items in this shipment conform to the requirements. Date: <u>18/8/17</u> Certified Signature: <u>[Signature]</u> Receiver Signature: _____ A.T.G Industries Inc. is AS9100 Registered and Nadcap Chemical Processing Accredited. Note: This Packing Slip may contain parts that have been PLATED. Items that are plated may be subject to natural tarnishing and it is suggested that they be inspected within 24 hours of receipt. Made in Canada.			